

ments therein stated, as applying to the extension of my especial subject—Biology—may be found to suit the case and claims of science teaching at large. And it may not be inappropriate to conclude by re-echoing the remark with which I started, namely, that if we can succeed in creating a demand for science teaching, by showing the honest claims and true value of scientific instruction in an ordinary educational curriculum, we shall have paved the way for a harmonious and natural after-adjustment of such questions as have very ably been ventilated in NATURE during the past few weeks.

Edinburgh Medical School

ANDREW WILSON

I have read with considerable interest what may be styled the evidence of your correspondents as to the state of scientific instruction in schools, and I think possibly if your space will permit me, that I shall be able to confirm some of the statements of previous writers. I have reason to believe that in some large schools where science is demanded as a branch of education it is practically suppressed, some of the clever lads are removed from the science classes in order to be "crammed" in classics, sometimes against their own desires, for the purpose, if possible, of making a show in school-lists as having obtained scholarships at Oxford. I am acquainted with facts which cannot be otherwise explained. Sometimes I have learned these from the boys themselves, sometimes from science-masters in different establishments. At one large school in connection with a College there are about 600 boys; formerly very nearly 100 attended chemistry lectures once a week, and about 25 attended the chemical laboratory of the College for 1½ hour. The subject was a voluntary one, and the undoubted interest shown by the scholars was very striking; one could see that they were being taught to think, it was something so entirely different from their ordinary school work. For the last year or two the number of boys attending these science classes has been limited almost entirely to those who intend matriculating at the London University, those whose parents expressly wish their sons to receive such education, or others "the most stupid and ignorant," who are so unlikely to hold their own in any other competition that it is considered they may be better fit for distinction in science. I need hardly say that one fails to make anything of the latter class, although, on the other hand, I have seen such lads display unusual mechanical skill. The number of boys from the school now attending the laboratory is only eight, and those who hear lectures about thirty-six. In a school with unusual facilities for scientific instruction at a small cost, since the teachers, the laboratories, the lecture-rooms, and the very costly scientific apparatus, all belong to the College, there is this small result simply because the pupils are prohibited attending the lectures on science lest, as it is said, "*they should shirk their other work.*" This is certainly not equalising the various branches of human knowledge. In some schools the science masters are appointed not from among those who have made the teaching of science a study, but from that peculiar body who are willing to combine instruction in science (which includes, of course, Physics, Chemistry, Natural History, and Botany), with Mathematics, Classics, and Foreign Languages, and whose views as to the suitable remuneration for their services suggests a limited expenditure of thought, time, and money, on their own acquirements. From the present low estimation in which scientific knowledge is held, I should be exceedingly sorry to see the number of efficient science teachers increased. The capital expended on a classical education gives a far better, a more certain, and a quicker return than that invested in science. Hence the lamentations about the state of science in this country. Until the Head Masters and College dons have been so liberally educated as to understand that besides Classics and Mathematics there are other branches of knowledge which ennoble and enrich

the understanding, and further, until a legal status has been secured for professional scientific men, such things must continue.

W. N. HARTLEY

## NOTES

THE John Hopkins University, some account of the organisation of which we recently published, was formally instituted at Baltimore, U.S., on February 22. Prof. Gilman in his address hinted that elementary instruction in all branches of science is not contemplated at the new University. There will be no stated curriculum of four years. Great freedom is to be allowed both to teachers and to scholars; the former must be "free and competent to make original researches in the library and the laboratory;" the latter will be encouraged to "make special attainments on the foundation of a broad and liberal culture," and to make them through a "combination of lectures, recitations, laboratory practice, field work, and private instruction." Pending the filling of the several professorial chairs, the trustees will ask the most eminent men, both in Europe and America, to come to Baltimore during a term of years, and reside there an appointed time, "and be accessible, *publice et private*, both in the lecture-room and in the study." One most important appointment has already been made, by which England will lose, for a time at least, one of her most distinguished mathematicians; Dr. J. S. Sylvester has been appointed to the Chair of Advanced Mathematics, at a handsome salary. Prof. Sylvester will probably enter upon his duties in October next.

THERE is great activity at present at South Kensington; the preparations for the opening of the Scientific Loan Exhibition are in a forward state. A large number of contributions have been already received from France, Germany, Belgium, Holland, and Italy.

CONTRARY to the assertion of a contemporary, who apparently desires to mislead, the men of science of this country are giving the greatest help in the organisation of the Conferences and Conversazioni in connection with the Loan Exhibition; these will be held between May 16 and 31.

H.M.S. *Challenger* arrived at Monte Video on Feb. 15, and was to sail on Feb. 23 for Ascension and St. Vincent. The ship is expected to arrive in England about the end of May.

A CAREFULLY prepared and well classified and indexed Catalogue of Maps, &c., of India, and other parts of Asia, has been prepared by the Geographical Department of the India Office, and published by order of H. M. Secretary of State for India in Council. The Catalogue is accompanied with an Index-Map showing the different sheets which are published or which are being prepared by the engraver for publication.

M. J. CAPELLO, director of the Observatory at Lisbon, has selected Lisbon, Campo-Maior, Angra in the Azores, and Funchal in Madeira, as the stations from which meteorological observations will be furnished for international objects. Their situation, and the fact of their observations being made four times daily, have determined the selection of these four stations. The hours are well suited for purposes of international meteorology.

THE Belgian Academy of Sciences offers prizes for papers on the following subjects, to be sent to the Secretary, M. J. Liagre, at the Museum, Brussels, before Aug. 1, 1877:—1. To give a *résumé* of works which have appeared on the theory of continued fractions, and to improve it in some important point. 2. To examine and discuss, on the basis of new experiments, the perturbing causes which bear on determination of the electro-motive force, and on the internal resistance of an element of the electric pile; to exhibit in numbers these two quantities for some of the

principal piles. 3. New researches to establish the composition and mutual relations of albumenoid substances. 4. To establish, by direct observations and experiments, the functions of the various anatomical elements of Dicotyledinous stems, especially in relation to the circulation of nutritive substances and the use of the fibres of the liber. 5. Does the generative vesicle perform the same part in eggs which are developed without previous fecundation (by parthenogeneses) as in fecundated eggs? 6. Investigation of the cycle of evolution in a group of the class of Algæ. — The conditions usual in such competitions are laid down, and the prizes are gold medals varying in value from 600 to 1,000 francs.

THE *Athenæum* of Saturday last has a well-timed and justly severe note in connection with the filling up of two vacancies among the trustees of the British Museum. A writer in the *Times* has mentioned the names of Sir Henry Rawlinson and Mr. Layard as having claims for the vacant posts, and the *Athenæum* shows that only one trustee is appointed by the Crown, and that the two vacancies will be filled up by the Trustees themselves. "Let us hope," the *Athenæum* says, "that they may see fit to appoint the two scholars in question, or at least one of them. But if they are elected, they will succeed to a perfectly barren honour, unless they are subsequently placed on the Working Committees. It is notorious, that Dr. Hooker, who is a trustee, by virtue of his office as President of the Royal Society, has absolutely no voice in the disposal of the vast collections of natural history contained in the Museum; and that, although there is no naturalist among the trustees with the exception of Sir Philip Egerton. And it is doubtful whether such men as Mr. Layard and Sir Henry Rawlinson, whose sympathies are likely to be with progress and reform, with scholarship and education, will be quite in harmony with that system which has made the British Museum what it now is. They might not feel anxious to strengthen the hands of those officials who are said to have recently endeared themselves to the gentlemen and scholars beneath them by the issue of a slave circular (to use the name by which it is popularly known in the Reading-room), of which it is asserted that some member of the legislature will before long demand the publication."

WE are grateful to the *Daily News* for the advanced and decided views it always takes in matters affecting the interests of science; indeed its advocacy of the claims of science in the country is a distinctive feature of the paper. In an able article in Friday's issue the unsatisfactory condition of the British Museum is pointed out, and it is shown that until an entirely new system of management is instituted, no reform can be expected. "It would seem, indeed, as if the framer of the constitution of the British Museum had, with fiendish malignity, selected precisely those persons as trustees who could by no possibility find time to attend to their duties." It is shown that the recommendations of successive Royal Commissions have been ignored, and that no means have yet been taken to carry out improvements which would greatly increase the usefulness of the Museum. We hope that this article, in conjunction with the note in the *Athenæum* to which we have referred, will have some effect in stimulating the Government to carry out the recommendations of the Duke of Devonshire's Commission and take steps to render the Museum of greater service than it is to science and the country; and that even with its present drawbacks it does render great services must be admitted.

THE Royal Irish Academy has made the following grants out of the fund placed at its disposal by Parliament for advancing scientific research:—35*l.* to Rev. Eugene O'Meara for further Report as to the Distribution of Irish Diatomaceæ; 12*l.* to Prof. Leith Adams for a Report on Irish Pleistocene Mammals; 50*l.* to Rev. Prof. Haughton for a Report on the Tidal Constants of the Irish Coasts (towards the sum of 100*l.* required for the

expenses to be incurred); 25*l.* to Dr. Studdert and Mr. Plunkett for a Report on the Nature of the Mineral Waters of Mallow; 20*l.* to Dr. Chichester Bell for Report on the Chemical Constitution of Pyrol; 40*l.* 12*s.* 8*d.* to Dr. Emerson Reynolds for Report on the Atomic Weight of Glucinum; and 10*l.* to Dr. E. P. Wright for Report on Chytridia Parasitic on Floridææ.

THE Royal Irish Academy, at its stated meeting held on the eve of St. Patrick's Day, elected the following honorary members:—In the department of Science: Carl W. Borchardt, Alphonse Decandolle and Ernst Haeckel. In the departments of Polite Literature and Antiquities: Thomas Carlyle, Margaret Stokes, William Stubbs, Eugène E. Viollet-le-duc, and Ernst Windisch.

M. EMILE DE GIRARDIN and others are trying to organise a Universal Exhibition in Paris for 1878.

THE electric lamp and gramme machine which have been used so successfully at the Northern Railway Station, Paris, have been sent *via* Marseilles to Malta, to be employed in the illuminations when the Prince of Wales stops there on his way home from India.

IN the title to Mr. Evans's recent address to the Geological Society, we inadvertently prefixed Royal to the designation of the Society; we regret that so important a society has not attained to this dignity.

THE Imperial Zoological-Botanical Society of Vienna, celebrates, on April 8, its sixtieth anniversary.

ON July 1 an Exhibition of Arts, Manufactures, Agriculture, &c., will be opened at Helsingfors, the capital of Finland.

PROBABLY not many of our readers are aware of the fact that Great Britain has recently become possessed of the island of Socotra, near the mouth of the Gulf of Aden. Mr. P. L. Selater calls attention to the fact in Saturday's *Times*, in order to intimate that we are almost completely ignorant of its natural productions. We trust, with him, that the new British Governor and his assistants will not neglect to furnish us, before long, with some account of the natural denizens of this *terra incognita*.

FEARS are entertained that the extraordinary dryness which has recently prevailed in Algeria will lead to a famine. It is stated that no rain has fallen this summer during the usual wet season.

IT is said that a number of governments have given their approbation to the scheme initiated by Austria for sending to the Polar regions a number of vessels to explore scientifically the countries which have been discovered by the *Polaris* and *Tgethoff* expedition.

VISCOUNT CARDWELL is to ask the Government to-day in the House of Lords what course they intend to pursue with regard to Cambridge University. In answer to the Marquis of Lansdowne who, on Monday, among other things asked whether Science would be represented in the Oxford University Commission as well as rank, dignity, and learning, the Marquis of Salisbury stated he had no objection to name the Commissioners next Monday, and at the same time he would state the nature of the amendments to be proposed by the Government.

VAST masses of dense smoke were reported to be issuing from Mount Vesuvius on Sunday; flame was visible at night; the apparatus at the Observatory was in a state of disturbance, and an eruption seems probable before long.

DR. PETERMANN has sent us one of the best maps we have seen illustrating Cameron's route between Lake Tanganyika and the coast. The map, which is based on that of the Royal Geographical Society, is on a comparatively large scale, shows the



routes of Cameron, Livingstone, Magyar, and the Pombeiros, Cameron's camping stations, all the rivers observed by Cameron, and is coloured to show the orographical features. It extends from 3° to 13° N. lat.

IN Monday's *Times* is a long letter from the Rev. S. Macfarlane, giving an account of an interesting trip in the missionary steamer *Ellangowan*, for 170 miles up the Fly River, New Guinea. The account seems to be essentially the same as that read at the last meeting of the Geographical Society. Signor D'Albertis was on board and obtained a considerable number of natural history specimens. Mr. Macfarlane sums up the results of the trip as follows:—"Several important ends have been gained by our visit to the Fly River. We have proved that there really is a navigable river there extending far into the interior of the country. We have opened up the way, which has hitherto been guarded with great determination by savages, and have taught them the danger of attacking European vessels. On our return we succeeded in establishing what appeared to be a genuine friendship between the natives and ourselves, exchanging presents. We have learnt something of the character of the interior; and, although we found it low and swampy up to the highest point we reached, we have at least proved that high land is not to be reached within at least two hundred miles by the course of the river, the first hundred being thickly populated by a mixed race—Papuan and Malayan—speaking different dialects, and at war with each other. They are an intelligent-looking, energetic people. We obtained a considerable number of specimens of natural history. We were disappointed at not reaching high land with populous and healthy villages suitable for stations."

THE death is announced of the widow of the late Hugh Miller at the age of sixty-four years. She took a chief part in editing her husband's works after his death, and gave much assistance to Mr. Peter Bayne in the preparation of the sturdy geologist's biography.

DR. PARKES, F.R.S., the distinguished professor of hygiene at the Army Medical Schools, died on the 15th inst.

THE Oxford Bardett-Coutts Scholarship has been awarded to Mr. A. H. S. Lucas, of Balliol College.

SEVERAL letters have appeared in the *Daily News* calling attention to the fact that on Sunday week red snow was observed to have fallen in several parts of the country—at Forest Hill and Streatham in the south of London, at Reading and at Thurston in Norfolk. This phenomenon was observed in ancient times, and is referred to by Pliny; in modern times it has been frequently observed in all parts of the world, and is familiar to Arctic explorers. The phenomenon is generally ascribed to the presence of an alga, *Protococcus nivalis*.

WE have received from the U.S. Geological and Geographical Survey of the Territories one of these valuable publications, which it is grievous to think the caprice of a political party may soon bring to a stop. This is a preliminary map of South-west Colorado, and part of Utah, Arizona, and New Mexico, showing the location of ancient ruins. The map is on the scale of five miles to an inch, and shows not only the sites of the prehistoric ruins which abound in the region, but the courses of the principal rivers and of dry gulches, and by means of lettering the general character of the surface of the country.

*Bulletin* No. 1, vol. ii. of the Geological and Geographical Survey of the Territories, under the direction of Prof. Hayden, is one of unusual interest. It contains seven articles, with the following titles:—1. A notice of the ancient remains of South-western Colorado examined during the summer of 1875. 2. A notice of the ancient ruins in Arizona and Utah lying about the

Rio San Juan. 3. The human remains found near the ancient ruins of South-western Colorado and New Mexico. 4. Ancient art in North-western Colorado. 5. Bead ornaments employed by the ancient tribes of Utah and Arizona. 6. Language and utensils of the Utes. 7. Fossil Coleoptera from the Rocky Mountain Tertiaries. The text is illustrated with twenty-nine octavo plates, embracing cliff and cave houses, arrow-heads, pottery, human skulls, &c. Mr. Scudder's article contains descriptions of thirty-one new species of fossil Coleoptera.

THE first section of the building for the American Museum of Natural History, in Central Park, New York, will be ready for occupation in the coming summer. Some time ago, our readers may remember, New York appropriated 700,000 dollars to commence this edifice, and it has also set aside for this section and its future extensions, 18½ acres of land worth from 5,000,000 dollars to 8,000,000 dollars. The whole edifice when complete will be about eighteen times as large as that now nearly ready, and will cost about 15,000,000 dollars. The collection is at present in a wooden building, which is visited by an average of 13,600 people per week—2,000 more than the average weekly number of visitors to the entire collections in the British Museum.

THE additions to the Zoological Society's Gardens during the past week include two Suricates (*Suricata zenib*) from S. Africa, presented by Mr. G. Thorburn; a Knot (*Tringa canutus*), European, presented by Mr. C. Clifton; a Rhesus Monkey (*Macacus erythraeus*) from India, presented by Mr. Robert Law Ogilby; a Bonnet Monkey (*Macacus radiatus*) from India, presented by Mr. J. Shortland; a White-Cheeked Capuchin (*Cebus lunatus*) from Brazil, presented by Dr. Lynn; an Aztec Conure (*Conurus aztec*) from Mexico: two All Green Parrakeets (*Protophyta tiriacula*) from S. America, purchased; a Collared Fruit Bat (*Cynonycteris collaris*), born in the Gardens.

#### REPORT OF THE CAMBRIDGE STUDIES' SYNDICATE

THE Syndicate appointed in May last year to consider the requirements of the University of Cambridge in different departments of study, have just issued their Report. This contains many features of interest. We reprint the answers of the Board of Natural Science Studies to the questions sent by the Syndicate. What the nature of these questions is may easily be gathered from the answers.

I.—A—(a). The Board is of opinion that lectures are required in the University on the following subjects:—1. Principles of chemistry and inorganic chemistry, organic chemistry, physical and thermal chemistry, &c., analysis, elementary qualitative, analysis, elementary quantitative, analysis (1) of minerals (metallurgy, &c.); (2) organic; (3) volumetric; (4) spectrum.

Catechetical lectures are also required, suited for students of different degrees of attainment. There should be also laboratory teaching in practical chemistry, including qualitative and quantitative analysis and instruction in chemical research. Probably one term would suffice for each course of lectures, except the general course on chemistry and perhaps the course on organic chemistry which might occupy two terms each. For the special courses on analysis one or two lectures a week or three lectures a week for part of a term would suffice.

2. An elementary course on physics, occupying two terms. Special courses:—(1) General physics, dynamics, &c. (1 term). (2) Heat and thermodynamics (2 terms). (3) Sound and Light (2 terms). (4) Electricity and Magnetism (3 terms). (5) Methods of observation, &c. (1 term). Higher courses (chiefly mathematical):—(1) Heat and thermodynamics (1 term). (2) Sound and light (1 term). (3) Electricity and magnetism (2 terms). There should be a course of practical laboratory instruction extending over three terms, and special laboratory teaching for advanced students.

3. A course on elementary crystallography, and one on mineralogy, together occupying about two terms.

4. General geology, physical geography, and geological physics. Stratigraphical geology. Petrology. Palæontology—general.